

Revision of the Tribe Chalepini of America North of Mexico. I.
Genus *Xenochalepus* Weise
(Coleoptera: Chrysomelidae)¹

JANARDHAN G. BUTTE

DEPARTMENT OF BIOLOGY

STATE UNIVERSITY OF NEW YORK, FARMINGDALE

Introduction

The North American species of the tribe Chalepini have not received comprehensive taxonomic treatment since the revision by Horn (1883). Most of the literature on this tribe is fragmentary and scattered. Some of the species are not well known and there is little in the literature to depict their geographical distribution. The names recently used for some species have been incorrectly applied. Contributions by Chapuis (1875), Spaeth (1937), Uhmann (1940), and others ignored old genotype designations or have shifted recent generic names without fixing their type-species. Some species have been incorrectly synonymized by previous workers. Judging from the above facts, it seems a review of this group at the present time is warranted.

This revision of *Xenochalepus* is the first in a proposed series reviewing the six genera of Chalepini of America North of Mexico. Many of the data on biology reported here are from unpublished notes in the late H. S. Barber's file. They are acknowledged in the text where they occur.

Methods

The male genitalia, found to be diagnostic for the species, were prepared for study by treatment with KOH, and stained with Gage's stain in the manner suggested by Arnett (1947). Illustrations were prepared with the aid of a "Tri-Simplex Microprojector" or an ocular reticle.

The general distribution given for each species is based on the specimens that I have examined. Undoubtedly more extensive collecting would increase the known range of many of the species. No attempt (except in case of *Chalepus hebalus* Sand. and *Sumitrosis lateritia* (Smith, 1886)) was made to cite the records given in the literature, because of the uncertainty of many of the identifications.

The measurements described below were found to be useful in certain instances for separating the sexes of a species or for segregating the species. The measurements were taken as follows: Total length (Fig. 1) was taken from the apex of the frontal carina to the apex of the elytra. Pronotal length (P. L.) was measured from the anterior to posterior margin along the midline; elytral length (E. L.) was the distance between the basal and apical margins of elytra. Pronotal width (P. W.) and elytral width (E. W.) were taken at the widest part of the body.

¹From a dissertation submitted in partial fulfillment of the requirements for the Ph.D. degree at the Catholic University of America, Washington, D. C., 1966.

Classification

Tribe Chalepini

This tribe is considered to be a very large one, consisting of about 24 genera from all parts of the world. The Junk Catalogue (Uhmann, 1964) lists only five genera for North America. In this study the genus *Odontota* Chevrolat, is re-adopted and a new generic name *Sumitrosis* is proposed for the species incorrectly assigned to *Anoplitis* Kirby, 1837, with *Hispa rosea* Weber, 1801, here designated as its type species.

Based on a study of the external anatomy and the male genitalia of more than 6,700 specimens the tribe is found to contain six North American genera: *Anisostena*, *Sumitrosis*, *Baliosus*, *Chalepus*, *Odontota*, and *Xenochalepus*. Only *Xenochalepus* is considered for taxonomic revision in this paper.

Diagnostic and Key Characters of Adults

Characters of diagnostic value for separating taxa of this tribe are associated with the color of the body, size, shape and color of the clypeus, shape of the frontal carina, dentation of the mandibles, sulci on the antennae, interocular width, lateral margins of the pronotum, elytral striae and male genitalia.

The interocular width is a useful character expressed by a comparison between the maximum width of one eye and the smallest distance between the eyes.

The striae should be counted at the base of the elytra. Some species have the striae anastomosing near the middle or apex of the elytron.

The male genitalia provide some of the most useful taxonomic characters. The length of the flagellum offers the best diagnostic character for separating the genera as well as the species. The relative size of the basal foramen and width and shape of its dorsal wall offer useful characters. Shape of the apical orifice, lateral plates, and length of strut, are extremely useful in distinguishing between closely allied species.

The males are smaller than the females and the mesotibia of the male has a small, subapical, conical tooth which the female lacks. The 5th visible sternum of the female has an irregular patch of setae on either side of the central elevation, whereas in males it is hardly perceptible.

Relative proportions of parts are frequently referred to in the key and descriptions, and it is essential that a microscope with an ocular reticle be available so that these characters can be used.

Plate I. Figs. 1-9.

Fig. 1. Dorsal view of *Xenochalepus potomaca* n. sp. Fig. 2. Elytral apices of *Odontota floridanus* n. sp. Fig. 3. Elytral apices of *Xenochalepus robiniae* n. sp. Fig. 4. Apex of last tarsal segment of *Xenochalepus omogera* (Crotch). Fig. 5. Apex of last tarsal segment of *Xenochalepus potomaca* n. sp. Fig. 6a-6c. Male genitalia of *Xenochalepus omogera* (Crotch). Fig. 6d. Female spermatheca of *Xenochalepus omogera* (Crotch). Fig. 7. Female spermatheca of *Xenochalepus potomaca* n. sp. Fig. 8a-8c. Male genitalia of *Xenochalepus robiniae* n. sp. Fig. 9a-9d. Male genitalia of *Xenochalepus ater* (Weise).

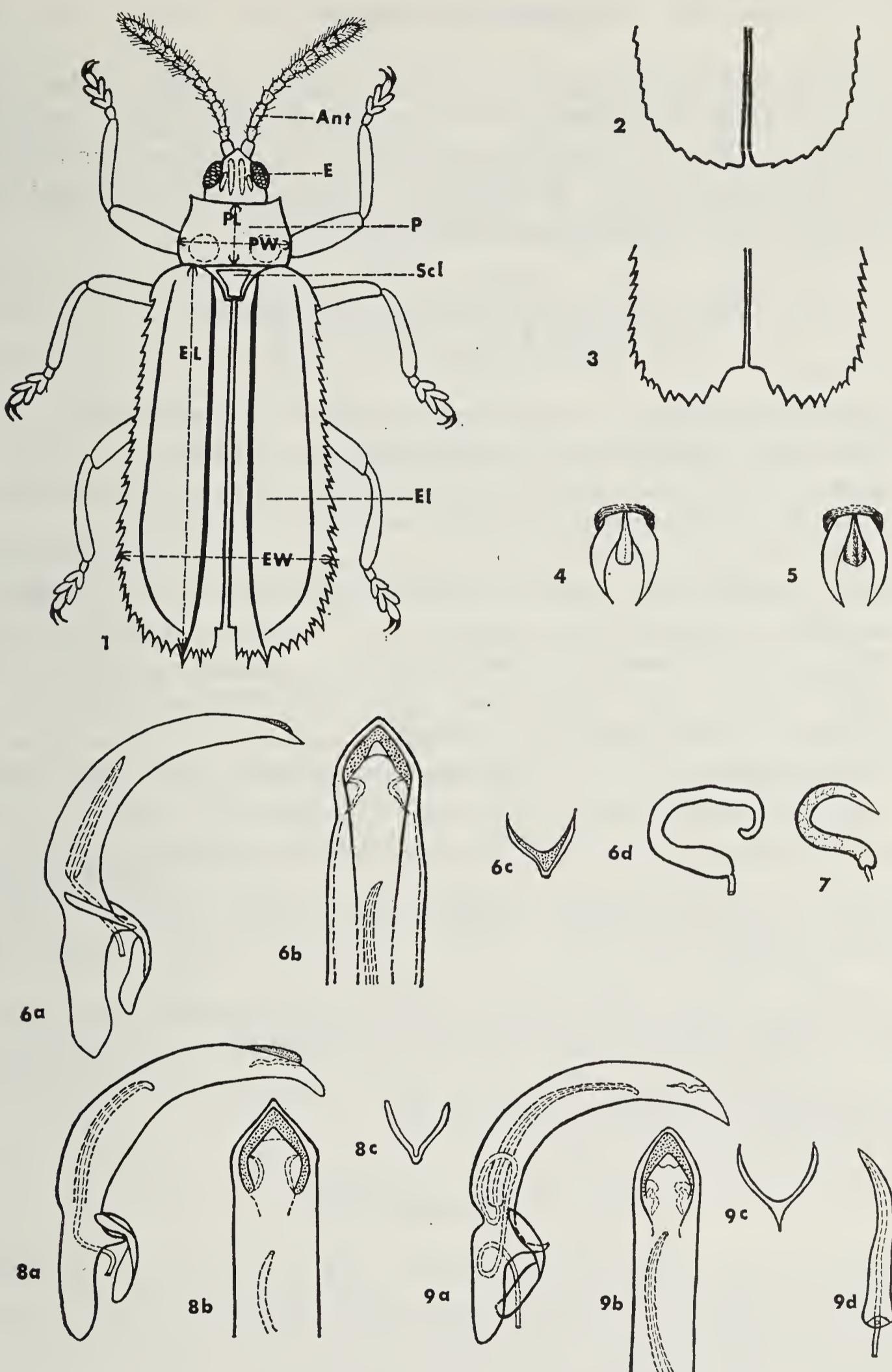


PLATE I

List of Abbreviations

Ant, antenna
E, eye
El, elytron

EL, elytral length
EW, elytral width
P, pronotum

PL, pronotal length
PW, pronotal width
Scl, scutellum

Explanation of Figures

The drawings of the genitalia pertaining to the same species have been given the same number with the addition of letters, a, b, c, d, to distinguish the different views and parts: a, lateral, or slightly dorsolateral, view of aedeagus and tegment; b, dorsal, or dorsocaudal, view of aedeagus; c, spiculum gastrale, usually dorsal, or dorsocaudal view; d, flagellum or female spermatheca.

Key to Genera of North American Chalepini (Modified from Arnett, 1963)

1	Elytra each with eight or eight and one-half rows of punctures.....	2
1'	Elytra each with ten or ten and one-half rows of punctures.....	3
2	Body slender, nearly cylindrical; eyes feebly swollen, at least not projecting out farther than side of neck; mesotibiae strongly bent.....	
		<i>Anisostena</i> Weise
2'	Body broader, very wide at shoulders; eyes more or less swollen; mesotibiae straight or weakly bent.....	
		<i>Sumitrosis</i> n. gen.
3	Clypeus yellow, smooth or micropunctate.....	
3'	Clypeus black, rarely with yellow margin, rough, thick and finely punctured, or coarsely granularly punctate.....	4
4	Form elongate; each elytron with ten striae at base.....	
4'	Form oval or cuneiform; each elytron with eleven striae at base.....	5
5	Apices of elytra regularly rounded, sutural angles rectangulate (Fig. 2).....	
		<i>Odontota</i> Chevrolat
5'	Apices of elytra conjointly rounded, sutural angles deeply subquadrate-emarginate (Fig. 3).....	
		<i>Xenochalepus</i> Weise

The generic name *Odontota* Chevrolat, 1837, was long used for our species and is correct. The new generic name *Sumitrosis* is proposed for the species incorrectly assigned to *Anoplitis* Kirby, 1837. The reasons for these generic changes will be given in the parts dealing with those genera.

Genus *Xenochalepus* Weise

Xenochalepus Weise, 1910:136; 1911 (a):26; 1911 (b):35, 38; Leng, 1920:303; Uhmann, 1936:614; 1938:420; Blackweider, 1939:64; Uhmann, 1940:144; 1947:115, 125; Monrós and Viana, 1947:193, 229; Arnett, 1963:915, 940.

Type Species of Genus. *Xenochalepus omogera* (Crotch), 1873:81, by present designation.

Diagnostic Features of Genus. Clypeus and frons very prominent. Clypeus quadrate and distinctly margined; surface tuberculate, very rugose; raised prominently; base angulate and very close to base of antennae. Pronotum with baso-lateral torulose on either side of posterior depression. Elytron distinctly bicostate; 2nd interspace strongly, the 8th moderately, costate; 4th interspace not costate. Each

elytron with ten and one-half rows of punctures. Sutural angles of elytra conjointly emarginate.

Description of Genus. Species cuneiform, robust; length from 7.2 to 8.0 mm.; males generally larger than females.

Head slightly wider than long; vertex sulcate. Surface between antennae elevated into longitudinal ridge reaching base of clypeus. Interocular width variable. Basal antennal segment always incrassate and inserted dorsally before the middle of length of eye. Clypeus large; surface generally raised as whole; base angulate and ventral of antennal insertion; surface sculpturing rugged to rugulose. Labrum prominent; broader than long: outer margin of each mandible rather broadly and evenly arcuate. Eyes convex, large and elongate-oval in form. *Pronotum* broader than head and wider than long; conic in dorsal aspect with base generally wider than apex; lateral margins bisinuate and angulate at middle; dorsum transversely convex and slightly depressed posteriorly with ante-scutellar transverse ridge; surface generally coarsely foveo-punctate; interstices usually cristate; with smooth baso-lateral torulose present on either side of posterior depression. Torulose of variable size and color. Last tarsal segment produced between bases of claws into a narrow, triangular, truncate process. Elytra elongate-ovate; apices conjointly rounded and deeply subquadrate-emarginate at suture; with lateral and apical margin serrulate; each elytron with ten and at extreme base with eleven rows of punctures. *Abdomen* sparsely micro-punctate; apex of fifth visible sternum slightly emarginate; generally 5th sternum of female with small irregular patch of setae on either side of central elevation and in males patch scarcely perceptible.

Male Genitalia. Aedeagus from moderately to heavily sclerotized and showing considerable curvature from below. Basal foramen fairly large; with posterio-ventral border prominent and subtriangular. Median lobe tapering distally to subacute point. Apical orifice large and V-shaped. Apical hood large, triangular with acute posterior end. Strut keeled and flattened dorsally. Flagellum stout, broad basally and gradually tapering into an acute posterior end. The speculum generally U-shaped.

Distribution. The distribution of this genus is as follows: UNITED STATES, Maryland, Virginia, Texas and Arizona, BRITISH WEST INDIES, MEXICO, CUBA, GUATEMALA, NICARAGUA, COSTA RICA, PANAMA, COLOMBIA, VENEZUELA, SURINAM, FRENCH GUIANA, BRAZIL, ECUADOR, PERU, BOLIVIA, PARAGUAY, URUGUAY, ARGENTINA.

Discussion. This very homogenous genus is represented in the United States by four species: *X. omogera* Crotch; *X. robiniae* n. sp.; *X. ater* Weise; and *X. potomaca* n. sp. The clear strong generic characters facilitate rapid separation from other genera in the tribe Chalepini. The prominent, quadrate clypeus with the coarsely tuberculate surface and the distinctly bicostate elytra with the sutural angles conjointly emarginate are diagnostic. The elytral characters will separate it from the anatomically similar genus *Odontota*, in which the elytra are distinctly tricostate and the sutural angles not emarginate. The close relationship between the two is indicated by the prominence of the clypeus and frontal ridge, presence

of ten and one-half rows of punctures on each elytron, and the structure of the male genitalia.

Nomenclatural Notes. *Xenochalepus* Weise (1910) as originally proposed included four specific and four subspecific names. The Fabrician name, *Hispa dentata*, was not originally included and the citation of that name as genotype by Uhmann (1940:144) is invalid. I, therefore, designate *Xenochalepus omogera* (Crotch, 1873) as type of the genus *Xenochalepus* Weise, 1910. This species was placed by Spaeth (1937:151) in his new subgenus *Hemichalepus* for which the type species was not designated. *Chalepus (Hemichalepus) holdhausi* Spaeth, 1937, is designated here as the type species of *Hemichalepus*.

Key to the Species of *Xenochalepus* of North America

- 1 Antennal segments 3-6 relatively stout, coarsely irregularly sulcate and carinate; a groove over the frontal carina absent; lateral pronotal margins obtusely angulate; apex of last tarsal segment between the bases of claws feebly sulcate (Fig. 4): Eastern Mexico to Costa Rica.....
..... *omogera* (Crotch)
- 1' Antennal segments 3-6 more slender and less deeply sulcate; a groove over the front carina present; lateral pronotal margins angulo-subtundate; apex of last tarsal segment between the bases of claws deeply cleft (Fig. 5)..... 2
- 2 Prosternum yellow; pro and mesofemora yellow at basal one-third; pronotal medial line absent; mandibles distinctly bidentate; Washington, D. C. on wild bean vine..... *potomaca* n. sp.
- 2' Prosternum, pro and mesofemora black; pronotal medial line well-defined; mandibles usually unidentate..... 3
- 3 Antennal segments 3-6 smooth, shining, sulci hardly perceptible; pronotum wholly red, (rarely posterior depression infuscate), lateral sides not piceous; Arizona on native locust..... *robiniae* n. sp.
- 3' Antennal segments 3-6 feebly shining with stronger sulci; pronotal posterior depression and lateral sides piceous; Arizona, on soybeans..... *ater* (Weise)

1. *Xenochalepus omogera* (Crotch, 1873) (Fig. 4; 6, a, b, c, d; Plate II)

Odontota omogera Crotch, 1873:80; Horn, 1883:295. (Location of type: Museum of Comparative Zoology, Cambridge, Massachusetts.)

Type Locality. Tampico, Mexico.

Odontota palliata Chapuis, 1877:8; Baly, 1886:84. (Synonymized). (Location of type: Musee Royal del' Afrique Centrale, Brussels, Belgium.)

Type Locality. Mexico.

Chalepus omogerus (Crotch), Baly, 1885:49; 1886:83; Champion, 1894:239.

Chalepus (Xenochalepus) omoger (Crotch), Weise, 1910:143; 1911 (a):28; 1911 (b):38.

Xenochalepus omoger ab. *palliatus* (Chapuis), Uhmann, 1930:249; 1938:424; 426.

Xenochalepus deficiens Uhmann, 1930:247; 1938:424, 426; (Synonymized); 1950: 337; (Location of type; United States National Museum, Washington, D. C.)

Type Locality. Costa Rica.

Xenochalepus (Hemichalepus) deficiens (Uhmann), Spaeth, 1937:151, Uhmann, 1957:97.

Xenochalepus (Hemichalepus) omoger (Crotch), Spaeth, 1937:151; Uhmann, 1957:96.

Xenochalepus omogerus (Crotch), Uhmann, 1964:420.

Xenochalepus subomoger Uhmann, 1937:66; 1938:426; Maulik, 1937:137; Uhmann, 1957:97. (NEW SYNONYMY).

Type Locality. Lacaja, near San Jose, Costa Rica.

Diagnostic Features. This species resembles *X. potomaca* in color, size, and shape, but may be readily separated from the latter by the presence of the following characters.

Antennal segments 3-6 relatively stout, coarsely, irregularly sulcate and carinate; a groove over the front carina absent; lateral pronotal margins obtusely angulate and entirely black; the apex of last tarsal segment between the bases of claws feebly sulcate.

Description of Species. Male. Texas, Webb Co., Laredo. (USNM).

Length 7.5 mm.; width 2.6 mm.; cuneiform; robust. *Head* length/width ratio, .777; vertex quadrisulcate, sulci close to eyes well-defined, short and deep; median sulci shallow, broad and vestigeous. Frontal carina narrow, feeble and joins clypeal base; groove over the frontal carina not present. Antennae 2.5 mm. long; antennal joints 3-6 robust, coarsely, irregularly sulcate and carinate; rotula at the base of 1st segment; basal segment incrassate, cylindrical, broader than long; segments 2-6 obconic; 2nd shorter than 1st; 3rd subequal in length to the preceding two combined; 6th equal in its length and width. Clypeus large; with only apical two-third semi-circular area raised; ventral surface rugged. Labrum prominent, broader than long, apical margin arcuate and sparsely micro-rugose. Mandibles prominent, unidentate; apical tooth obtuse. Eye width equal to transverse width of clypeus at apex and slightly wider than dorsal interocular width. *Pronotum* transverse; length .9 mm.; width 1.6 mm.; base wider than apex; widest basally, lateral margins obtusely angulate at middle and bisinuate. Dorsum transversely convex, depressed posteriorly with ante-scutellar transverse ridge; surface coarsely and deeply foveo-punctate; interstices cristate. Pronotum with small baso-lateral torulose on either side of basal depression. Medial line well-defined with shallow longitudinal groove. Mesosternal length/width ratio, .656. Meso- and metatibia of male without subapical tooth; last tarsal segment produced between bases of claws into a narrow truncate process; process with apex feebly sulcate. Scutellum longer than broad at apex; widest basally; lateral margins gradually narrowing towards apex; apical margin truncate and subarcuate medially. *Elytra*

elongate-ovate; length 6.5 mm.; width 2.6 mm.; slightly dilated posteriorly; outer margin distinctly serrulate more coarsely so posteriorly and on the apical border; punctures of elytra generally rounded and large, but slightly transverse towards base in first four rows and small towards apex in first stria near suture. Each elytron bicostate; 2nd interstice smooth and strongly costate; 8th interstice moderately costate; 8th interstice apically feebly tuberculate; 4th interstice and basal and apical portions of 6th interstice also feebly costate. *Abdomen* sparsely micro-punctate; 5th sternum apically subtruncate, slightly emargination perceptible and in male scarcely perceptible setae on either side of the medium elevation.

Color. Interocular space with small rufo-fulvous patch anteriorly. Pronotum bicolored; with large median black vitta, width confined to posterior depression and narrowing behind anterior pronotal margin; lateral margin of pronotum black; the dark area narrowing to anterior and posterior angles of pronotum; remaining area of pronotum uniformly orange-yellow. Neck ventrally and prosternum orange-yellow. Profemora with a basal two-fifths orange-yellow ring. Elytra black, the humeral one-fourth of the elytral length with an elongate yellow triangular area extending from the base of the 1st costa to the lateral elytral margin. Abdomen with narrow bright yellow vitta at lateral sides.

Male Genitalia. Aedeagus considerably sclerotized and showing greater curvature from below (Fig. 6a). Basal foramen large, slightly less than one-fourth the length of aedeagus. Lateral plates of apical hood large and irregular (Fig. 6b). Tegmen U-shaped, each arm elongate, lateral sides nearly parallel, subapically broad and apex acute. Strut long, close to foramen, keeled and flattened dorsally. Flagellum stout, broad basally and gradually tapering into an acute posterior end; length of flagellum less than one-fourth the length of aedeagus. Spiculum (Fig. 6c) U-shaped and somewhat asymmetrical.

Female. Spermatheca as shown in Fig. 6d. Fifth abdominal sternum with a small, irregular patch of setae on either side of central elevation.

Biology. Maulik (1937) reported the food-plant as wild bean vine (Vitaceae).

Variation and Discussion. Size variation is as follows: male: total length 7.3-7.7 mm.; elytral length 6.0-6.5 mm.; width 2.6-3.0 mm.; female: total length 8.1-8.2 mm.; elytral length 7.0-8.0 mm.; width 3.2-3.4 mm. The total length of the males is less than the females, and thus shows sexual dimorphism of total length.

No topotypes of *X. omogera* are available but a series of 21 specimens from the vicinity of Cordoba, Mexico, are believed to be this species. Their basal antennal segments (especially segments 3-6) are very roughly sculptured with irregular short sulci separated by sharp carinae and because of these phalanged ridges, appear robust. The orange-yellow basal areas of the elytra varies in this series from small humeral spot, supposed to be typical of *X. omogera* Crotch, to involve the basal third of the elytra as found in *palliata* Chapuis, 1877.

Xenochalepus subomoger Uhmann, 1937, was based upon 42 specimens. All except one from Chiapas were from Lacaja, near San Jose, Costa Rica, on *Fabacea* sp. (Fagaceae). The additional Costa Rican specimens before me seem to be referable under this name, a few others agree better with *X. deficiens* Uhmann,

1930, but these seem to be merely degrees of extension of the flavescece and unworthy of separation from the true *omogera* Crotch. For these reasons I consider this as a synonym of *X. omogera*.

Baly (1886:84) was correct in uniting *omogera* with *palliata* and Uhmann (1938:424) with *deficiens* on the basis of color variations.

Distribution. The distribution of *Xenochalepus omogera* Crotch, is indicated on Plate II.

Specimens Examined. 10: 6 males and 4 females. Texas: Webb Co., Laredo, 5 males, 3 females, (USMN). No further data: 1 male, 1 female, F. C. Bowditch collector, (MCZ).

2. *Xenochalepus potomaca* new species (Fig. 1; 5; 7; Plate II)

Diagnostic Features. Antennal segments 3-6 slender, feebly shining with stronger vestiges of sulci; mandibles distinctly bidentate; narrow elytral margin will serve as recognition characters for this species.

Holotype. VIRGINIA, Arlington County, near Chain Bridge (WASHINGTON, D. C.), July, 1918, H. S. Barber collector; female, Type No. 69138, deposited in the United States National Museum Collection.

Host Plant. *Phaseolus polystachios* (L.), (wild bean vine).

Description of Holotype. Length 7 mm.; width 2.9 mm.; cuneiform. Head length/width ratio, 0.8; vertex tetrasulcate; sulci close to eyes are short, narrow and deep; median sulci broad and shallow, the latter changes anteriorly into a narrow carina which extends as a knife-like septum between the antennae and joins the clypeal base; groove above the front carina present. Antennae 2.3 mm. in length; segments 3-6 slender, less deeply sulcate and feebly shining with stronger vestiges of sulci; 2nd and 3rd segment cylindrical and slightly expanded apically; segments 4-6 obconic; 1st longer than 2nd; 3rd about twice the 2nd or 4th segment. Labrum very prominent and quadratus; about two-thirds broader than length; dorsum transversely convex with ground sculpturing. Mandibles prominent, distinctly bidentate; distadentis large, acute and sharp; proxadentis small and acute. Eye transversely wider than the width of clypeus and equal at dorsal interocular space. *Pronotum* transverse; length 1.0 mm.; width 2.2 mm.; conic; base wider than apex; widest medially; lateral margins angulosubrotundate at middle, narrowing anteriorly and parallel posteriorly; bisinuate; dorsum transversely convex, slightly depressed posteriorly with antescutellar transverse ridge; foveo-punctate less developed; interstices subcristate, sparsely alutaceous, shiny medially and with ground sculpturing laterally. Medial line ill-defined. Legs normal, last tarsal segment produced between bases of claws into a narrow triangular truncate process, its apex deeply cleft (Fig. 5). Scutellum at apex broader than length; lateral margins parallel at one-half from apex; sinuate; apical margin truncate, subemarginate. *Elytra* elongate-ovate; length 6.0 mm.; width 3.3 mm.; slightly dilated posteriorly; lateral and apical margin serrulate; punctures of elytra

small, rounded almost similar in size; each elytron with second interspace strong, smooth, the eighth moderate, feebly serrated, costate; 4th and 6th interspaces with microscopically tuberculate but not costate. *Abdomen* with 5th sternum apically emarginate and in female with a small irregular patch of setae on either side of the central elevation.

Color. Yellow markings consist of a spot on the vertex, a pair of broad sublateral pronotal areas confluent along anterior margin above and involving the prosternum below, as well as joining the small humeral spot; anterior femora yellow at basal one-third, meso-femora feebly spotted at base; a median longitudinal yellow vitta on mesosternum; sides of abdomen narrowly margined with yellow.

Genitalia. Male was not observed in the collection. Female spermatheca as shown in Fig. 7, which may be distinguished from *X. omogera*.

Paratypes. 14: all females. VIRGINIA, Arlington Co., near Chain Bridge, Aug. 19, 1916, Snyder and Barber collectors, reared from *Phaseolus polystachios*, 3 females, (USNM); Va., near Chain Bridge, July, 1918, H. S. Barber, 8 females, (USNM); Va. near Chain Bridge, T. E. Snyder and J. N. Knull collectors, reared, VII-21-1916; (USNM).

Additional Specimens Examined. 22: all females. VIRGINIA: Arlington Co., near Chain Bridge, Aug. 10, 1916, 12 females, Snyder and H. S. Barber, (USNM); July, 1918, 9 females, H. S. Barber, (USNM). MARYLAND: Plummers Island, Nov. 26, 1905, 1 female, W. L. MacAnee, (USNM).

Biology. "A colony found by T. E. Snyder in woods facing the Potomac River in July, 1916, . . ." was several times visited and the type series was reared by the late H. S. Barber, from blotch mines of *Phaseolus polystachyus* in the same locality in July, 1918. "One paratype was found on Nov. 26, 1905, near Plummers Island, Md., by W. L. MacAnee, and others were found by J. C. Bridwell, about 1928, on the same host plant near Barcroft, Va., and reared from mines in its leaves, but these samples are not at hand." (Unpublished data from H. S. Barber.)

Variation and Discussion. The size variation is as follows: total length 7.0-8.0 mm.; elytral length 6.0-6.5 mm.; width 2.9-3.2 mm.

The length of humeral yellow spot varies from a small spot to one-fourth the length of elytra. Meso- and metafemora coloration near base may be varied from a broad yellow ring to a feebly yellow spot or absent.

Form, sculpture and color pattern much as in *X. omogera* Crotch, but the smaller, shining, feebly sulcate and alutaceous basal antennal joints, contrast with the larger, subopaque, rugosely carinate sculpture on segments 3-6 of *X. omogera*. The sculpture of the pronotum is less distinct, the basolateral prominence, the alutaceous surface and the fovaolate punctures being less developed in the new species. The elytra are similar in surface sculpture, but the margin is less expanded, the lateral and apical teeth as well as the apical emargination are much smaller.

Distribution. The distribution of *Xenochalepus potomaca* n. sp., is indicated on Plate II. This species is known from Maryland and Virginia, and it has been collected from late July to late November, but mostly in August.

Plate II.

Distribution of species of *Xenochalepus*.

3. *Xenochalepus robiniae* new species

(Fig. 3; 8, a, b, c; Plate II)

Diagnostic Features. Pronotum and vertex red; a very small red basal elytral spot on the fourth interstice behind the pronotal callus, rarely a basal median infuscate area on the pronotum; antennal segments 3-6 slender, cylindrical, smooth, shining with faint vestiges of the alutaceous sculpture containing decumbent scale-like hairs; aedeago-flagellum less than one-third the length of aedeagus.

Holotype. ARIZONA, Coconino Co., Oak Creek, 5,500 ft. alt., near Flagstaff, May 16, 1916, L. N. Gooding collector and received from the late B. P. Clark; male; Type No. 69137, deposited in the United States National Museum Collection.

Host Plant. *Robinia neomexicana* Gray, (Native locust).

Description of Holotype. Length 7.0 mm.; width 2.6 mm.; cuneiform. Head length/width ratio, .875; vertex tetrasulcate; anteriorly with a median longitudinal carina, becoming slightly wider, diamond-shaped at a point above the antennal bases; carina extends as a sharp, narrow septum between antennae and joins the clypeal base; a groove above the front carina present. Antennae 2.4 mm. in length; segments 3-6 slender, cylindrical, smooth, shining with faint vestige of the alutaceous sculpturing and with a few very shallow punctures containing decumbent scale-like hairs; 2nd and 4th nearly equal and 1.2 times longer than 1st; 3rd twice the 1st. Clypeus large, prominent, pentagonal and its margins well-defined; ventral surface coarsely and irregularly tuberculate. Labrum prominent, broader than long; apical margin arcuate and sparsely micro-granulose. Mandibles prominent, unidentate, apical tooth acute. Eye transversely equal the width of clypeus and dorsal interocular space. *Pronotum* transverse; length 1.0 mm.; width 1.7 mm.; conic; base wider than apex; widest medially; lateral margins angulosubrotundate at middle, narrowing anteriorly and obliquely more so posteriorly; dorsum transversely convex, depressed posteriorly with ante-scutellar transverse ridge; surface coarsely, deeply foveo-punctate; interstice subcristate, shining medio-anteriorly and with ground sculpturing in posterior depression. Medial line well-defined with shallow longitudinal groove. Mesotibia of male with a prominent triangular sub-apical tooth; hind tibia with a small triangular tooth at one-third from apex; last tarsal segment produced between bases of claws into a narrow truncate process, its apex broadly bifid to meet the flexed claws. Scutellum at apex broader than length; widest basally; lateral margins parallel at one-third from apex; sinuate; apical margin truncate, subemarginate. *Elytra* elongate-ovate; length 5.4 mm.; width 2.6 mm.; slightly dilated posteriorly; apices conjointly rounded and deeply subquadrate-emarginate at the suture (Fig. 3); punctures of elytra rounded and generally large, but distinctly small toward apex in first row near suture; each elytron with 2nd interspace strong, smooth, the 8th moderate, feebly serrate, costate; the basal and apical portion of the 6th interspace with a feebly, microscopically tuberculate-carinate. *Abdomen* with 5th sternum apically slightly emarginate and in male hardly perceptible setae on either side of median elevation.

Color. Subopaque, black; the pronotum, vertex and a very small red basal elytral spot on the fourth interstice behind the pronotal callus; rarely a basal median infuscate area on the pronotum; abdomen narrowly margined with pale yellow at sides.

Male Genitalia. Aedeagus heavily sclerotized and showing considerable curvature from below (Fig. 8a). Basal foramen large, slightly less than one-fourth the length of aedeagus. Lateral plates of apical hood large and regular (Fig. 8b). Tegmen V-shaped, each arm short, subapically broad and apex subacute. Strut short, not close to foramen, keeled and flattened dorsally. Flagellum stout, broad at base and gradually tapering into a curved, acute posterior end. Length of flagellum slightly less than one-third the length of aedeagus. Spiculum V-shaped, emarginate at the base (Fig. 8c).

Allotype. Same data as holotype. Female. Length 7.5 mm.; width 3.0 mm. Female is somewhat larger than that of the male. The prominent, triangular, subapical tooth on meso- and metatibia absent. On 5th visible sternum a small irregular patch of setae on either side of the central elevation.

Paratypes. 46: 19 males, 22 females, 5 sex undetermined. Paratypes are designated from the following localities: ARIZONA, Coconino Co., Oak Creek, 5,500 ft. alt., near Flagstaff, May 16, 1916, L. N. Gooding collector for B. P. Clark, on Native Locust, 7 males, 9 females, (type locality) (USNM). Three other paratypes were collected on the same host plant at Williams, Coconino Co., Arizona, 7,000 ft. alt., June 9, 30 and July 29, 1901 by E. A. Schwarz and H. S. Barber, (USNM). Two paratypes are labeled with Mingus Mt., Arizona, I-IX-1925, W. W. Jones, (USNM). Manzanta Camp, Oak Creek Cyn., Coconino Co., Arizona, 5,000 ft., July 26, 1950, T. Cohn, P. Boone and M. Cazier collectors, 10 males and 9 females, (AMNH). 17 mi. S. Flagstaff, Oak Creek Cyn., Coconino Co., Arizona, 6,000 ft., July 27, 1950, T. Cohn, P. Boone and M. Cazier collectors, 1 male and 3 females, (AMNH). Baboquivari Mts., Browns Cyn., Pima Co., Ariz., VIII-5-1952, M. Cazier and R. Schrammel collectors, 1 male and 1 female, (AMNH).

Biology. This species has been collected on *Robinia neomexicana* Gray (Native locust), in Arizona at Mingus Mt., Oak Creek, 5,500 ft. and Williams, 7,000 ft. altitude from May 16th to Sept. 1. (H. S. Barber, Unpublished).

Larvae. Unknown.

Variation and Discussion. Size variation is as follows: Total length: males 6.8-7.0 mm.; females 7.3-7.6 mm.; elytral length: males 5.4-5.7 mm.; females 5.7-6.1 mm.; elytral width: males 2.6-2.8 mm.; females 2.8-3.0 mm. The total length of the males studied is considerably less than the length of the females, and thus shows striking sexual dimorphism of total length.

Uhmann (1938:426), has included *arizonicus* Uh. in the key to the species of *Xenochalepus*. But I have transferred this species into the genus *Odontota* Chevrolat, as the apices of the elytra is regularly rounded and is not subquadrate-emarginate.

Distribution. The distribution of *Xenochalepus robiniae* is indicated on Plate II. This species is known from Arizona, and it has been collected from middle of

May to early September, mostly in July. The above localities could indicate mountain top distribution from 5,000 to 7,000 ft. altitude.

4. *Xenochalepus ater* (Weise, 1905)
 (Fig. 9, a, b, c, d; Plate II)

Chalepus omoger ab. *ater* Weise, 1905:134. (Location of type: probably in the Zoologischen Museum der Universitate Berlin.)

Type Locality. México.

Chalepus (Xenochalepus) ater (Weise), 1910:144; 1911 (a):26; 1911 (b):38; Leng, 1920:303.

Xenochalepus ater ab. *crotchi* Weise, 1910:144; 1911 (a):26; 1911 (b):38; Leng, 1920:303; Uhmann, 1938:426. (Synonymized). (Location of type: probably in the Zoologischen Museum der Universitate Berlin.)

Type Locality. México.

Chalepus ater (Weise), Jones and Brisley, 1925:174; Böving and Craighead, 1931:66; Pallister, 1953:81.

Chalepus (Hemichalepus) ater (Weise), Spaeth, 1937:151.

Xenochalepus (Hemichalepus) ater (Weise), Uhmann, 1938:424; 1957:94; 1964: 420.

Diagnostic Features. This species resembles *X. robiniae* in size, and shape, but may be separated from the latter by the following characters:

Antennal segments 3-6 feebly shining with stronger sulci; pronotum fulvous to rufo-fulvous and usually lateral margins piceous; aedeago-flagellum less than one-third the length of aedeagus, strut short and not close to foramen.

Description of Species. Male. Arizona, Santa Cruz Co., Pena Blanca, (USNM).

Length 7.3 mm.; width 3.0 mm.; cuneiform. Head length/width ratio, 0.75; vertex quadrisulcate, all sulci well-defined and deep; carina between sulci sparsely alutaceous; groove over the front carina short and shallow. Antennae 2.4 mm. segments 3-6 slender, feebly shining, with stronger vestiges of sulci; basal segment incrassate; 2nd and 3rd cylindrical; 3rd slightly expanded apically; segments 4-6 obconic; 1st and 2nd subequal in length; 3rd equal in length to the preceding two combined; 4th larger than 5th. Clypeus large, quadrate, raised as a whole; ventral surface coarsely and irregularly rugosissimus. Labrum considerably prominent; broader than length; apical margin subarcuate and sparsely micro-rugose. Mandibles prominent; feebly bidentate; apices of distadentis large, obtuse and sharply arcuate; cutting edges broad and sharp. Eye transversely equal to the width of clypeus and wider than the dorsal interocular space. Pronotum transverse; length 1.1 mm.; width 2.0 mm.; conic; base wider than apex; widest medially; lateral margins bisinuate, angulo-subrotundate at middle, narrowing obliquely toward base and more so toward apex; dorsum transversely convex, depressed posteriorly with ante-scutellar transverse ridge; surface coarsely, densely foveo-punctate; interstice cristate, shining, alutaceous medio-anteriorly and microreticulate ground sculpturing in posterior depression and laterally. Medial line well-defined with shallow longitudinal groove. Mesosternal length/width ratio, 0.351. Mesotibia of

male with a prominent triangular subapical tooth; metatibia with a prominent triangular tooth at one-third from apex. Last tarsal segment produced between the bases of claws into a narrow truncate process; its apex broadly bifid to meet the flexed claws. Scutellum length and width at apex subequal; widest basally, lateral margins subparallel at one-third from apex; sinuate, apical margin truncate, emarginate. *Elytra* elongateovate; length 5.8 mm.; width 2.8 mm.; apices conjointly rounded and deeply subquadrate-emarginate at the suture; apical limb distinctly explanate; outer margin distinctly serrulate, more coarsely so posteriorly and on the apical border; punctures of elytra rounded, large and almost similar in size; each elytron with second interspace strong, smooth, the eighth moderate, feebly serrulate, costate; the basal portion of 6th interspace also slightly elevated. *Abdomen* with 5th sternum apically subtruncate, excindate sublaterally and scarcely perceptible setae on either side of central elevation.

Color. A small rufo-fulvous patch on anterior interocular space. Pronotum bicolored; posterior depression and usually lateral sides piceous; the remaining area of pronotum fulvous or rufo-fulvous. Elytra black, except a small basal spot on the fourth interstice behind the pronotal callus from fulvous to rufo-fulvous. Abdomen with narrow bright yellow vitta at lateral sides.

Female. A groove over the front carina is long, deep and extends beyond interocular space. The 5th abdominal sternum with a small, irregular patch of setae on either side of central elevation.

Male Genitalia. Aedeagus moderately sclerotized and showing considerable curvature from below (Fig. 9a). Basal foramen small, nearly equal to one-fifth the length of aedeagus. Lateral plates large and irregular (Fig. 9b). Tegmen V-shaped, each arm short, lateral sides subparallel and apex obtuse. Strut long, bent upward into foramen, keeled and flattened dorsally. Flagellum stout, broad at base and gradually tapering into an acute, arcuate apex (Fig. 9d); length of flagellum slightly less than one-half the length of aedeagus. Spiculum U-shaped and symmetrical (Fig. 9c).

Biology. Jones and Brisley (1925) recorded this species as mining in the leaves of a common cultivated bean (*Phaseolus vulgaris*, L.) in southern Arizona near Douglas and also in the Huachuca Mts. Jones reported it as abundant on soybeans at Douglas, Arizona, in August and September, 1942. "Peltier reared specimens from mines in leaves of string bean at Nogales in July, 1943, and again in August, 1945." (From H. S. Barber, unpublished data.)

Larvae. Böving and Craighead, 1931:66, has described and illustrated on plate 115 the larvae of *Chalepus ater* Weise:

"Eighth pair of abdominal spiracles well-developed, dorsal and annular, eighth abdominal segment terminal, with free hind margin." (Slightly modified after Böving and Craighead.)

Variation and Discussion. Size variation is as follows: total length: males 7.2-7.3 mm.; females 7.6-7.7 mm.; elytral length: males 5.7-5.8 mm.; females 5.8-6.0 mm.; elytral width: males 2.8-3.0 mm.; females 3.2-3.3 mm. The total length of the males studied is considerably less than the length of the females, and thus

shows striking sexual dimorphism of total length. Lateral margins of scutellum subparallel at one-third from apex in the specimens examined, but in some specimens, lateral margins gradually narrowing toward apex. The ratio of length/width at the apex of scutellum is variable; in some specimens, especially in females, the width is less than the length. Coloration of the prosternum is black, but in some specimens there is a small, median, longitudinal evanescent fulvous vitta between the pro-coxae.

Weise (1905) proposes the name *ater* for the melanic individuals from four localities in Mexico, which he considers a mere aberration of *Chalepus omoger* Crotch. Weise (1910) distinguishes between *omoger* (-*palliatus* Chapuis, 1877) of eastern Mexico and the form from the Mexican plateau which he considers a distinct species to be known as *Chalepus (Xenochalepus) ater* Weise, 1905, and proposes a new name *crotchi* for the abbreviation in which the yellow thoracic marks are developed. Spaeth, 1937:151, includes *ater* Weise, and *omogera* Crotch, in the key to species comprising his new subgenus, (*Hemichalepus*) of *Chalepus*. Uhmann in 1938, elevates *Xenochalepus* to generic rank including the subgenus *Hemichalepus* Spaeth.

Distribution. The distribution of *Xenochalepus ater* is indicated on Plate II. This species is known from Arizona and western Texas. It has been collected from middle of May to early October, mostly in July and August. The following localities indicate mountain top distribution.

Specimens Examined. 282: ARIZONA: Cochise Co., Chiricahua Mts., Cane Crk., 2 (CAS); Douglas, 1 (CAS); Carr Cn., 31 (CAS); Miller Cn., 14 (CAS); Palmerless, 7 (USNM); Huachuca Mts., 2, (USNM), 5 (CAS), 10 (AMNH), 8 (UKL), 2 (CU), Pima Co., Santa Rita Mts., 42 (CAS), 116 (UKL), from 5,000 to 8,000 ft. alt. Santa Cruz Co., Pena Blanca, 10 (USNM); Patagonia, 1 (CAS); Santa Rita Mts., Madera Cn. 5 (CAS). Gila Co., Sierra Ancha Mts., 4 (CU). No further data: 11, Morrison, Hibbard & Schwarz, (USNM); Senator, 2, Van Dyke, (CAS); Megas Mts., 2, Van Dyke, (CAS); 6, J. W. Green, (CAS); Garces, 2, Banks, (MCZ); 7, Liebeck, (MCZ). TEXAS: Jeff Davis Co., Davis Mts., 1, Van Dyke, (CAS); Ft. Davis, 1, (MCZ).

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Recently Introduced Beetles in the Pacific Northwest

LOREN RUSSELL

DEPARTMENT OF ZOOLOGY
UNIVERSITY OF WASHINGTON, SEATTLE

Brown (1967) has recently commented on the continuing introductions of European Coleoptera into the Atlantic Provinces of Canada and in the Puget Sound region of Washington and British Columbia. In these areas there are few native beetles pre-adapted to the steppe-like conditions of farmland and urban areas, and these habitats are consequently open to invasion by more or less synanthropic European species.

The species listed below include at least one new to North America, two or three previously introduced in eastern Canada, and two which have spread transcontinentally. Identifications were made by the author, and in several cases were confirmed by W. J. Brown.